

Requested Patent: JP2001209927A

Title: MAGNETIC RECORDING MEDIUM AND METHOD FOR PRODUCING SAME ;

Abstracted Patent: JP2001209927 ;

Publication Date: 2001-08-03 ;

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Application Number: JP20000015411 20000125 ;

Priority Number(s): ;

IPC Classification: G11B5/82; G11B5/851 ;

Equivalents: ;

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a magnetic recording medium using a glass substrate and having high magnetic anisotropy and coercive force. SOLUTION: A linear texture is formed on the surface of a glass substrate and an amorphous film containing at least Ni and P is formed by sputtering. The discoid substrate with the formed amorphous film is held in the air at room temperature and then heated and a Cr-base under film, a Co-base magnetic film and a protective film are successively formed on the amorphous film by sputtering.

JP 2001-209927

* NOTICES *

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CLAIMS

[Claim(s)]

[Claim 1] The magnetic-recording medium which is a magnetic-recording medium which consists of the ground film, Co system magnetic film, and the protective coat which consist of the disk-like glass substrate with which the crossing line-like texture was formed in the front face, the amorphous film which contains at least nickel and P which were formed of the spatter on it, Cr, or a Cr alloy, and is characterized by having a magnetic anisotropy in a circumferencial direction.

[Claim 2] The magnetic-recording medium according to claim 1 in the range whose crossed axes angle of the aforementioned line-like texture which carries out intersection is 0.1-45 degrees.

[Claim 3] The magnetic-recording medium according to claim 1 or 2 whose ratio of the coercive force of the circumferencial direction to the radial coercive force of the aforementioned magnetic-recording medium is 1.1 or more.

[Claim 4] The line-like texture which gives mechanical texture processing to the front face of a disk-like glass substrate, and intersects it is formed. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this line-like texture was formed.

Subsequently, the disk-like substrate in which this amorphous film was formed is held in the atmosphere of a room temperature. The manufacture method of a magnetic-recording medium of having a magnetic anisotropy in the circumferencial direction characterized by forming the ground film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on the aforementioned amorphous film.

[Claim 5] The line-like texture which gives mechanical texture processing to the front face of a disk-like glass substrate, and intersects it is formed. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this line-like texture was formed.

Subsequently, the disk-like substrate in which this amorphous film was formed is held in the atmosphere containing oxygen. The manufacture method of a magnetic-recording medium of having a magnetic anisotropy in the circumferencial direction characterized by forming the ground film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on the aforementioned amorphous film.

[Claim 6] The manufacture method of a magnetic-recording medium of having a magnetic anisotropy in the circumferencial direction according to claim 4 or 5 in the range whose crossed axes angle of the aforementioned line-like texture is 0.1-45 degrees.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to a magnetic-recording medium especially the magnetic-recording medium which has a magnetic anisotropy, and its manufacture method.

[0002]

[Description of the Prior Art] Generally the substrate which comes to form a NiP film in the front face of an aluminum substrate by the electroless deposition method as a substrate for hard magnetic disks is used. The magnetic-recording medium which gives mechanical texture processing to this NiP film surface, forms a line-like texture (henceforth a texture line), subsequently forms a ground film, a magnetic film, and a protective coat one by one by the spatter, and is obtained has a magnetic anisotropy in the direction of a texture line, and coercive force improves. High coercive force is desirable at the point which narrows densification of record, and isolated reproduction wave time half-value width (PWSO).

[0003] On the other hand, a glass substrate has the property which was [goodness / of flatness / hard nature] excellent as a substrate for hard magnetic disks. In this case, the NiP film by the electroless deposition method aiming at surface hard-izing is not needed.

[0004] Then, although to give mechanical texture processing directly on the surface of a glass substrate, and to form an effective texture line was desired in order to obtain the magnetic-recording medium which has a magnetic anisotropy using a glass substrate, there were few faults, such as a barricade and a crack, until now, and formation of a useful texture line was not industrially easy. bird origin established the method of making this possible recently (Japanese-Patent-Application-No. No. 279237 [11 to] specification) However, when Cr system ground film, Co system magnetic film, and a protective coat are formed one by one by the spatter on the glass substrate which formed the texture line by this method, a magnetic anisotropy does not appear and cannot obtain high coercive force.

[0005]

[Problem(s) to be Solved by the Invention] The purpose of this invention is to offer the magnetic-recording medium which has a magnetic anisotropy using the disk-like glass substrate which prepared the texture line in the front face by mechanical texture processing, and its manufacture method.

[0006]

[Means for Solving the Problem] the magnetic recording medium which be a magnetic recording medium which consist of the ground film, Co system magnetic film, and the protective coat which consist of the disk-like glass substrate with which the line-like texture (texture line) which this invention tend to solve the above-mentioned technical problem, and cross be formed in the front face, the amorphous film which contain at least nickel and P which be formed of the spatter on it, Cr, or a Cr alloy, and be characterize by to have a magnetic anisotropy in a circumferencial direction be offer.

[0007] The texture line in this invention usually consists of a curve which is running in the direction in alignment with the periphery, crossing. The angle opened in the direction in alignment with the

periphery and the angle opened to radial have the angle which the texture line which is running in the direction in alignment with the periphery crosses and makes, and those sums are 180 degrees. In this invention, a crossed axes angle means the angle opened in the direction in alignment with the above-mentioned periphery.

[0008] If the range of 0.1-45 degrees is desirable and, as for the crossed axes angle of the aforementioned texture line which carries out intersection, includes viewpoints, such as the productivity of mechanical texture processing, further in the magnetic-recording medium of this invention, it is appropriate to choose from the range of 0.1-25 degrees. Moreover, this invention has a magnetic anisotropy in a circumferencial direction, and offers the magnetic-recording medium whose ratio of the coercive force of the circumferencial direction to radial coercive force is 1.1 or more about coercive force.

[0009] Moreover, this invention forms the line-like texture which obtains the magnetic-recording medium of this this invention and which gives mechanical texture processing to the front face of a disk-like glass substrate, and intersects it as a method. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this line-like texture was formed. Subsequently, the disk-like substrate in which this amorphous film was formed is held in the atmosphere of a room temperature. The circumferencial direction characterized by forming the ground film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on the aforementioned amorphous film is provided with the manufacture method of a magnetic-recording medium of having a magnetic anisotropy.

[0010] Moreover, this invention forms the line-like texture which obtains the magnetic-recording medium of this invention and which gives mechanical texture processing to the front face of a disk-like glass substrate, and intersects it as a method. Subsequently, the amorphous film which contains nickel and P at least by the spatter is formed in the front face in which this line-like texture was formed. Subsequently, the disk-like substrate in which this amorphous film was formed is held in the atmosphere containing oxygen. The circumferencial direction characterized by forming the ground film, magnetic film, and protective coat which heat an after this disk-like substrate and consist of Cr or a Cr alloy by the spatter on the aforementioned amorphous film is provided with the manufacture method of a magnetic-recording medium of having a magnetic anisotropy.

[0011] In the manufacture method of the magnetic-recording medium of this invention, if the range of 0.1-45 degrees is desirable and includes viewpoints, such as the productivity of mechanical texture processing, further, it is appropriate for the crossed axes angle of a line-like texture to choose from the range of 0.1-25 degrees.

[0012]

[Example] (Example) the texture line was formed in the front face of the disk-like glass substrate which consists of alumino silicate glass by the method (Japanese-Patent-Application-No. No. 279237 [11 to] specification) of bird origin

[0013] Using the loose-grain slurry which contains the microfilament textiles tape made from polyethylene, the polycrystal diamond abrasive grain of 0.2 micrometers of mean particle diameters, and the cerium-oxide abrasive grain of 0.3 micrometers of mean particle diameters for the disk-like glass-substrate front face with a diameter of 65mm which carried out the chemical strengthening directly, the texture machine performed mechanical texture processing and the texture line was formed. The used loose-grain slurry was that in which contain a polycrystal diamond with a mass ratio and it contains a cerium-oxide abrasive grain at 5% of a rate 0.03% to the whole loose-grain slurry.

[0014] The glass substrate was rotating centering on the center of a circle, the above-mentioned tape was equally pushed from glass-substrate both sides with the roller, and mechanical texture processing was performed by dropping the above-mentioned loose-grain slurry on the outskirts of the contact section of the above-mentioned tape and a glass substrate. In order to give a crossed axes angle desirable as a texture line, the oscillation (circular motion or reciprocating movement) of a roller or the glass substrate was made to carry out in the direction which is parallel to the surface of revolution of a glass substrate, and is different from a hand of cut. A desired crossed axes angle can be obtained by controlling the

rotational frequency of a glass substrate, the mode of an oscillation, etc.

[0015] In this example, for glass-substrate rotational frequency 130rpm, and floor-to-floor-time 60 seconds, mechanical texture processing is performed on the above-mentioned loose-grain slurry flow rate of 18g / 60 seconds/page of conditions, and a crossed axes angle is 13 degrees.

[0016] Next, on the front face of a glass substrate in which the texture line was formed as mentioned above, nickel80P20 film (a number is the same atomic % and the following) was first formed by the spatter. After exhausting membrane formation up to 1.3×10^{-4} Pa by ultimate vacuum, 0.6Pa of Ar gas pressure performed it at the room temperature. This NiP film is amorphous and thickness could be 50nm.

[0017] Next, the glass substrate in which the above-mentioned NiP amorphous film was formed was taken out from the spatter chamber, and it was exposed into the atmosphere of the room temperature of a clean room (maintenance).

[0018] Subsequently, after introducing again into the spatter chamber the glass substrate exposed into the atmosphere of the above-mentioned room temperature and exhausting up to 1.3×10^{-4} Pa by ultimate vacuum, the Cr80Mo20 ground film (20nm of thickness) and Co69Cr17Ta4Pt10 magnetic film were formed by the spatter in this order by the substrate temperature of 250 degrees C, and 0.6Pa of Ar gas pressure. Subsequently, after forming a carbon system protective coat by the spatter, perfluoro polyether system lubricating film was prepared on this protective coat, and it considered as the sample of the example of this invention.

[0019] (Example 1 of comparison) The aforementioned ground film, the magnetic film, and the protective coat were succeedingly formed one by one on the same conditions as an example by the spatter, without having formed the nickel80P 20 amorphous film in the front face of the glass substrate with which the texture line was formed like the example by the spatter, and being exposed into the atmosphere of the room temperature of a clean room after that, subsequently the aforementioned lubricating film was prepared, and it considered as the sample of the example 1 of comparison.

[0020] (Example 2 of comparison) Without having not formed a NiP amorphous film in the front face of a glass substrate in which the texture line was formed like the example, and being exposed into the atmosphere of the room temperature of a clean room, a ground film, an aforementioned direct magnetic film, and a direct aforementioned protective coat were formed one by one by the spatter on the same conditions as an example, subsequently the aforementioned lubricating film was prepared, and it considered as the sample of the example 2 of comparison.

[0021] The coercive force (H_c) of each sample of an example, the example 1 of comparison, and the example 2 of comparison was measured as a property which shows a magnetic anisotropy. The coercive force (H_c) of the circumferencial direction of each sample is shown in drawing 1 . Moreover, the ratio of the coercive force of the circumferencial direction to the radial coercive force of each sample is shown in drawing 2 .

[0022] The magnetic-recording media of the example 1 of comparison which does not pass through the process exposed into the after [formation] atmosphere of a NiP amorphous film are low coercive force and a low coercive force ratio (about 1.02) as compared with the magnetic-recording medium obtained by the manufacture method of this invention. Moreover, the example 2 of comparison without a NiP amorphous film is also known by that they are low coercive force and a low coercive force ratio (about 1.05 a little less than) as compared with the magnetic-recording medium of this invention.

[0023] On the other hand, high coercive force and the high coercive force ratio (about 1.15) are obtained between formation of a NiP amorphous film, and ground film formation by the magnetic-recording medium (example) of this invention which performed exposure into the atmosphere, and it is clear to have a magnetic anisotropy remarkable in a circumferencial direction. Although the example took out the glass substrate which formed the NiP amorphous film by the spatter from the spatter chamber and it was exposed into the atmosphere of the room temperature of a clean room instead, the same result as the above was obtained also in the sample at the time of holding in the atmosphere containing the oxygen introduced in the spatter chamber.

[0024]

[Effect of the Invention] The magnetic-recording medium of this invention has a remarkable magnetic anisotropy and high coercive force. Moreover, according to the manufacture method of this invention, with the conventional technology, the magnetic-recording medium of high coercive force with the high and magnetic anisotropy which was not obtained can be obtained using the disk-like glass substrate in which the direct line-like texture was formed on the front face.

[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開2001-209927

(P2001-209927A)

(43) 公開日 平成13年8月3日 (2001.8.3)

(51) Int.Cl. ⁷	識別記号	F I	テマート [*] (参考)
G 1 1 B	5/82	G 1 1 B	5 D 0 0 6
	5/851	5/851	5 D 1 1 2

審査請求 未請求 請求項の数6 O L (全 4 頁)

(21) 出願番号 特願2000-15411(P2000-15411)

(22) 出願日 平成12年1月25日 (2000.1.25)

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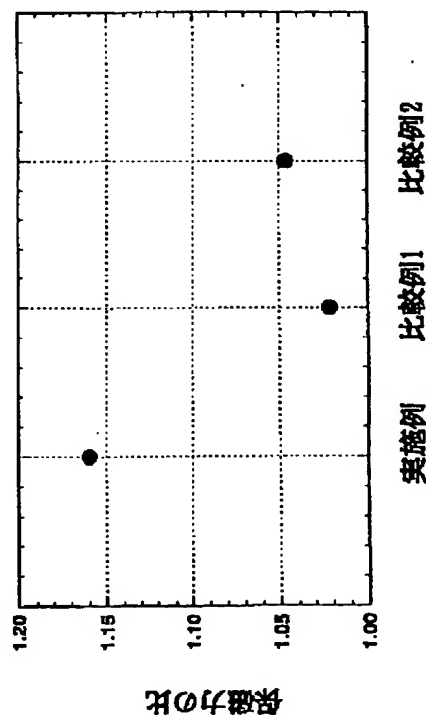
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(54) 【発明の名称】 磁気記録媒体とその製造方法

(57) 【要約】

【課題】 ガラス基板を用いた高い磁気異方性と保磁力を有する磁気記録媒体の提供。

【解決手段】 ガラス基板表面にライン状のテクスチャを形成し、次いでスパッタ法によりNiとPを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を室温の大気中に保持し、そののち該基板を加熱して前記アモルファス膜の上にスパッタ法によりCr系下地膜、Co系磁性膜、保護膜を順次形成する。



【特許請求の範囲】

【請求項1】交差するライン状テクスチャが表面に形成されたディスク状ガラス基板、その上にスパッタ法により形成されたNiとPを少なくとも含むアモルファス膜、CrまたはCr合金からなる下地膜、Co系磁性膜および保護膜からなる磁気記録媒体であって、かつ円周方向に磁気異方性を有することを特徴とする磁気記録媒体。

【請求項2】前記交差するライン状テクスチャの交差角が0.1〜45°の範囲にある請求項1記載の磁気記録媒体。

【請求項3】前記磁気記録媒体の半径方向の保磁力に対する円周方向の保磁力の比が1.1以上である請求項1または2記載の磁気記録媒体。

【請求項4】ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりNiとPを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を室温の大気中に保持し、そののち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりCrまたはCr合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法。

【請求項5】ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりNiとPを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を酸素を含む雰囲気中に保持し、そののち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりCrまたはCr合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法。

【請求項6】前記ライン状テクスチャの交差角が0.1〜45°の範囲にある請求項4または5記載の円周方向に磁気異方性を有する磁気記録媒体の製造方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は磁気記録媒体、特に磁気異方性を有する磁気記録媒体とその製造方法に関する。

【0002】

【従来の技術】ハード磁気ディスク用基板としてアルミニウム基板の表面に無電解メッキ法によりNiP膜が形成されてなる基板が一般的に用いられている。このNiP膜面に機械的テクスチャ加工を施してライン状のテクスチャ（以下テクスチャラインとも言う）を形成し、次いでスパッタ法により下地膜、磁性膜、保護膜を順次形成して得られる磁気記録媒体は、テクスチャラインの方

向に磁気異方性を有し、保磁力は向上する。高保磁力は、記録の高密度化および孤立再生波時間半値幅(PW₅₀)を狭くする点で望ましい。

【0003】一方、ハード磁気ディスク用基板としてガラス基板は硬質性や平坦度の良さ等の優れた特性をもつ。この場合表面の硬質化を目的とした無電解メッキ法によるNiP膜は必要としない。

【0004】そこでガラス基板を用いて磁気異方性を有する磁気記録媒体を得るために、ガラス基板の表面に直接に機械的テクスチャ加工を施して有効なテクスチャラインを形成することが望まれるが、これまでバリ、クラック等の欠点が少なく、工業的にも有用なテクスチャラインの形成は容易ではなかった。最近鳥元らはこれを可能とする方法を確立した（特願平11-279237号明細書）。しかしこの方法によりテクスチャラインを形成したガラス基板上にスパッタ法によりCr系下地膜、Co系磁性膜、保護膜を順次形成した場合に磁気異方性は出現せず、高保磁力を得ることはできない。

【0005】

【発明が解決しようとする課題】本発明の目的は、機械的テクスチャ加工により表面にテクスチャラインを設けたディスク状ガラス基板を用い磁気異方性を有する磁気記録媒体とその製造方法を提供することにある。

【0006】

【課題を解決するための手段】本発明は上記の課題を解決しようとするものであり、交差するライン状テクスチャ（テクスチャライン）が表面に形成されたディスク状ガラス基板、その上にスパッタ法により形成されたNiとPを少なくとも含むアモルファス膜、CrまたはCr合金からなる下地膜、Co系磁性膜および保護膜からなる磁気記録媒体であって、かつ円周方向に磁気異方性を有することを特徴とする磁気記録媒体を提供する。

【0007】本発明におけるテクスチャラインは、通常、交差しつつ円周に沿った方向に走っている曲線からなる。円周に沿った方向に走っているテクスチャラインが交差してなす角は、円周に沿った方向に開いた角と、半径方向に開いた角があり、それらの和は180°である。本発明において交差角とは、上記円周に沿った方向に開いた角をいう。

【0008】本発明の磁気記録媒体において前記交差するテクスチャラインの交差角は0.1〜45°の範囲が好ましく、さらに機械的テクスチャ加工の生産性などの観点を含めると0.1〜25°の範囲から選択することが適当である。また、本発明は円周方向に磁気異方性を有し、保磁力については、半径方向の保磁力に対する円周方向の保磁力の比が1.1以上である磁気記録媒体を提供する。

【0009】また本発明は、かかる本発明の磁気記録媒体を得る方法として、ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャ

を形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりNiとPを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を室温の大気中に保持し、そのうち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりCrまたはCr合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法を提供する。

【0010】また本発明は、本発明の磁気記録媒体を得る方法として、ディスク状ガラス基板の表面に機械的テクスチャ加工を施して交差するライン状テクスチャを形成し、次いで該ライン状テクスチャが形成された表面にスパッタ法によりNiとPを少なくとも含むアモルファス膜を形成し、次いで該アモルファス膜が形成されたディスク状基板を酸素を含む雰囲気中に保持し、そのうち該ディスク状基板を加熱して前記アモルファス膜の上にスパッタ法によりCrまたはCr合金からなる下地膜、磁性膜および保護膜を形成することを特徴とする円周方向に磁気異方性を有する磁気記録媒体の製造方法を提供する。

【0011】本発明の磁気記録媒体の製造方法において、ライン状テクスチャの交差角は $0.1 \sim 45^\circ$ の範囲が好ましく、さらに機械的テクスチャ加工の生産性などの観点を含めると $0.1 \sim 25^\circ$ の範囲から選択することが適当である。

【0012】

【実施例】（実施例）アルミノシリケートガラスからなるディスク状ガラス基板の表面に鳥元らの方法（特願平11-279237号明細書）によりテクスチャラインを形成した。

【0013】直径65mmの化学強化したディスク状ガラス基板表面を直接、ポリエチレン製微細繊維織物テープと、平均粒径 $0.2 \mu\text{m}$ の多結晶ダイヤモンド砥粒および平均粒径 $0.3 \mu\text{m}$ の酸化セリウム砥粒を含有する遊離砥粒スラリーを用い、テクスチャマシンにて機械的テクスチャ加工を行いテクスチャラインを形成した。使用した遊離砥粒スラリーは、遊離砥粒スラリー全体に対して質量比で多結晶ダイヤモンドを0.03%、酸化セリウム砥粒を5%の割合で含有するものであった。

【0014】ガラス基板は円の中心を軸に回転しており、ローラーにより上記テープをガラス基板両側から均等に押しつけ、上記遊離砥粒スラリーを上記テープとガラス基板の接触部周辺に滴下することにより機械的テクスチャ加工を行った。テクスチャラインとして望ましい交差角を持たせるために、ローラーまたはガラス基板を、ガラス基板の回転面に平行で回転方向と異なる方向にオシレーション（円運動または往復運動）させた。ガラス基板の回転数、オシレーションのモードなどを制御することにより所望の交差角を得ることができる。

【0015】本実施例ではガラス基板回転数130rpm、加工時間60秒、上記遊離砥粒スラリー流量18g/60秒/面の条件で機械的テクスチャ加工を行い、交差角は 13° である。

【0016】次に上記のようにしてテクスチャラインが形成されたガラス基板の表面に、まず $\text{Ni}_{80}\text{P}_{20}$ 膜（数字は原子%、以下同じ）をスパッタ法により成膜した。成膜は、到達真空度で $1.3 \times 10^{-4} \text{Pa}$ まで排気した後、Arガス圧0.6Paで室温で行った。このNiP膜はアモルファスであり、膜厚は50nmとした。

【0017】次に上記NiPアモルファス膜を形成したガラス基板をスパッタチャンバから取出しクリーン室の室温の大気中に曝露（保持）した。

【0018】次いで上記室温の大気中に曝露したガラス基板を再度スパッタチャンバに導入し、到達真空度で $1.3 \times 10^{-4} \text{Pa}$ まで排気した後、基板温度 250°C 、Arガス圧0.6Paで $\text{Cr}_{80}\text{Mo}_{20}$ 下地膜（膜厚20nm）、 $\text{Co}_{69}\text{Cr}_{17}\text{Ta}_4\text{Pt}_{10}$ 磁性膜をこの順でスパッタ法により形成した。次いでスパッタ法によりカーボン系保護膜を形成したのち該保護膜の上にパーフルオロポリエーテル系潤滑膜を設けて本発明の実施例の試料とした。

【0019】（比較例1）実施例と同様にしてテクスチャラインが形成されたガラス基板の表面に、スパッタ法により $\text{Ni}_{80}\text{P}_{20}$ アモルファス膜を形成し、その後クリーン室の室温の大気中に曝露することなく、引続きスパッタ法により前記の下地膜、磁性膜および保護膜を実施例と同じ条件で順次形成し、次いで前記潤滑膜を設けて比較例1の試料とした。

【0020】（比較例2）実施例と同様にしてテクスチャラインが形成されたガラス基板の表面に、NiPアモルファス膜を形成せず、またクリーン室の室温の大気中に曝露することなく、直接前記の下地膜、磁性膜および保護膜を実施例と同じ条件でスパッタ法により順次形成し、次いで前記潤滑膜を設けて比較例2の試料とした。

【0021】磁気異方性を示す特性として実施例、比較例1および比較例2の各試料の保磁力（ H_c ）を測定した。図1に各試料の円周方向の保磁力（ H_c ）を示す。また図2に各試料の半径方向の保磁力に対する円周方向の保磁力の比を示す。

【0022】NiPアモルファス膜の形成後大気中に曝露するプロセスを経ない比較例1の磁気記録媒体は、本発明の製造方法により得られる磁気記録媒体と比較して、低保磁力、低保磁力比（約1.02）である。またNiPアモルファス膜をもたない比較例2も本発明の磁気記録媒体と比較して、低保磁力、低保磁力比（約1.05弱）であることがわかる。

【0023】一方、NiPアモルファス膜の形成と下地膜形成の間に大気中への曝露を行った本発明の磁気記録

媒体（実施例）では、高保磁力かつ高保磁力比（約1.15）が得られており、円周方向に顕著な磁気異方性を有することが明らかである。実施例はスパッタ法によりNiPアモルファス膜を形成したガラス基板をスパッタチャンバから取出しクリーン室の室温の大気中に曝露したが、そのかわりに、スパッタチャンバ内に導入した酸素を含む雰囲気中に保持した場合の試料においても上記と同様な結果が得られた。

【0024】

【発明の効果】本発明の磁気記録媒体は顕著な磁気異方

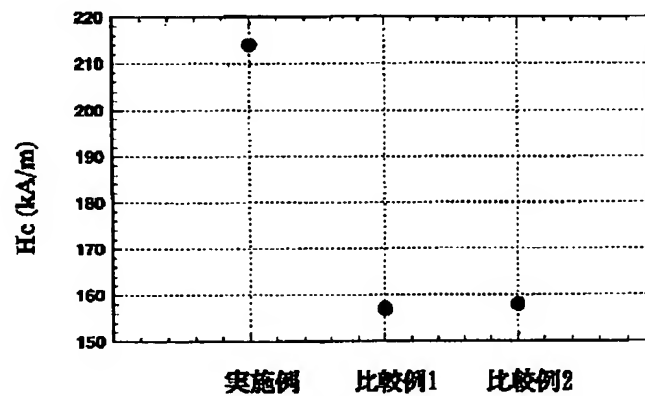
性および高い保磁力を有する。また本発明の製造方法によれば、表面に直接ライン状のテクスチャを形成したディスク状ガラス基板を用いて従来技術では得られなかった磁気異方性の高いかつ高保磁力の磁気記録媒体を得ることができる。

【図面の簡単な説明】

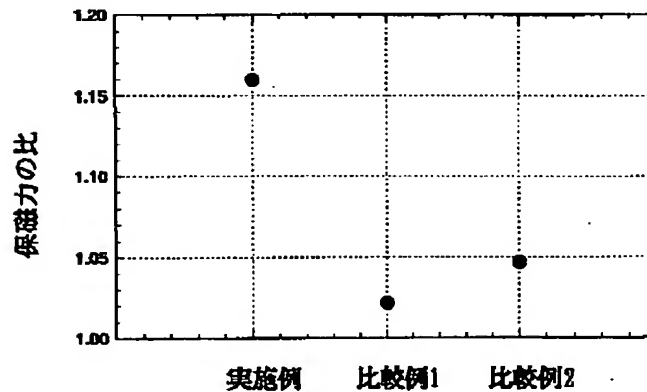
【図1】本発明の実施例、比較例1および比較例2の保磁力を示す図。

【図2】本発明の実施例、比較例1および比較例2における保磁力比を示す図。

【図1】



【図2】



フロントページの続き

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Fターム(参考) 5D006 BB01 BB07 CA01 CB04 CB07
CB08 DA03 EA03 FA09
5D112 AA02 AA03 AA05 AA11 AA24
BA03 BA05 BB05 BD04 FA04
GA02 GA05 GA09 GB01